


LPA Concepts

10W TETRA MULTICARRIER AMPLIFIER MODULE

Customer : -	LPA-RPA2-10-380M-430M-28-03
LPA CODE : P1970	
380-430MHz ; 10Wav/100Wpeak power High linearity : +70dBm equivalent IP3 Low power consumption : 70W @ 10Wave 44dB Gain Internal / External ALC Monitoring / Control through RS485 bus RoHs compliant Directive 2015/863	

Electrical characteristics : 50 ohms; 385MHz-430MHz; -20°C to +75°C (1,2)

Ref	parameter	conditions	note	min	typ	max	units
1	Bandwidth			385		430	MHz
2	Instantaneous bandwidth			25			MHz
3	gain	400MHz ; 40°C		44			dB
4	Gain flatness	380-430MHz				1	dBpp
5	Gain variation vs temperature	400MHz ; -20°C to +70°C				1	dB
6	Input return loss	50 ohms				-16	dB
7	Output return loss	50 ohms				-16	dB
8	2 tone intermodulation	f1= 390MHz +37dBm f2= 410MHz +37dBm			-73	-68	dBc
9	Reverse intermodulation	f1 at +37dBm forward f2 at +27dBm reverse				-36	dBm
10	Peak power	10 CW tones peaked -50dBc		80	100		W
11	IMD multicarrier	10 carriers at 1W each	3			-36	dBm
12	IMD multicarrier	20 carriers at 0.5W each	3			-36	dBm
13	Harmonic suppression	1 carrier @ 10Wav	4		-40		dBc
14	Noise figure	400MHz			14		dB
15	Total consumption at idle				1.4	1.6	A
16	Total consumption at 10W out	PAR=3dB	5		2.7	2.9	
17	Total consumption at 10W out	PAR=8.5dB	5		2.3	2.5	A
18	Ext ALC output level	+40dBm 1 carrier		1.8	1.9	2.1	V
19	Ext ALC slope	Linear in dB 10dBm to 40dBm			0.05		V/dB
20	Ext ALC output rise time	10-90% rise time 0-37dBm step			0.2		ms
21	Int ALC set point (Paverage)	through RS485		+27		+43	dBm
22	Int ALC response time	Set point to Set point + 10dB			0.5	1	ms
23	Int ALC recover time	From set point +10dB			0.2	1	s
24	Int ALC dynamic			20			dB
25	Overdrive threshold	CW frequency	6	+44	+45	+46	dBm
26	Shut down time on overdrive	6dB overdrive			5		ms

1. Unless otherwise specified
2. Housing temperature
3. random phases
4. all harmonics
5. power consumption varies with PAR.
6. Automatic shut down above threshold

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Maximum ratings

Ref	parameter	conditions	note	min	nom	max	units
1	Operating temperature	Flange temperature	7	-40°C		+90	°C
2	Supply voltage		8	0V		32	V
3	In band output power	380MHz-430MHz	6			+43	dBm
4	Out of band input power	<380MHz or >430MHz	9			-20	dBm

- 7. Automatic shut down at 90°C
- 8. Automatic shut down above 33V
- 9. at max gain (60dB)

Communication & software

Ref	parameter	designation	conditions	Remarks
1	RS485 communication		Half duplex	2 wire; 9600 bauds
2	Amplifier address		h80	Hex value, fixed
3	Instruction set	TKMA20001	Programmers guide	

Controls

Ref	parameter	designation	conditions	Remarks
1	ON/OFF	ONOFF		through RS485 see programmers guide instruction set
2	Int ALC on/off	ALC		
3	Int ALC level set	ALCLVL	+33dBm to +43dBm	

Monitoring

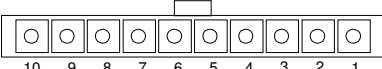
Ref	parameter	designation	conditions	Remarks
1	temperature	M1	Hot spot temperature (10)	through RS485 see programmers guide instruction set
2	Forward output power	M2		
3	Reverse output power	M3		

- 10. housing temperature – hot spot temperature $\leq 15^\circ\text{C}$ @10W

Alarms

Ref	parameter	designation	conditions	Remarks	location
1	Main amplifier alarm	A1		Alarm but no action	RS485
2	Auxiliary supply alarm	A2		Alarm but no action	RS485
3	Overtemp alarm	A3	Temp > 90°C	Shut down	RS485
4	Overcurrent/overvoltage	A4	I>4.0A V>32V	Shut down	RS485
5	Forward output power alarm	A5	Pforward>+43dBm	Alarm but no action	RS485
6	Reverse output power alarm	A6	Preverse>+30dBm	Alarm but no action	RS485
7	Full status				RS485
8	Alarm voltage	ALA	ALA=A1+A2+A3+A4+A5+A6	Open collector +5V when no alarm; 0V when alarm	Connector pin 5

DC Connector (Molex Microfit 10 contacts male)

Pin description			Connector pinout
Pin 1 : RS485 TxRx-	Pin 5 : ALA	Pin 9 : +28V	
Pin 2 : RS485 TxRx+	Pin 6 : N/C	Pin 10 : +28V	
Pin 3 : Gnd	Pin 7 : Gnd		
Pin 4 : ALC	Pin 8 : Gnd		

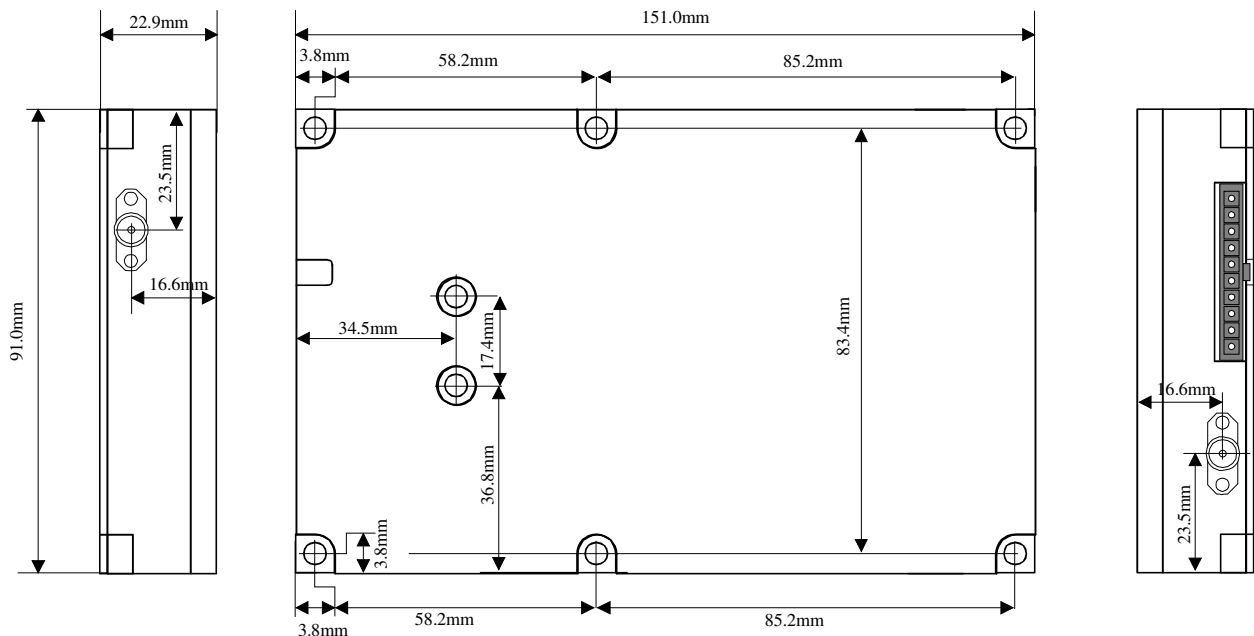
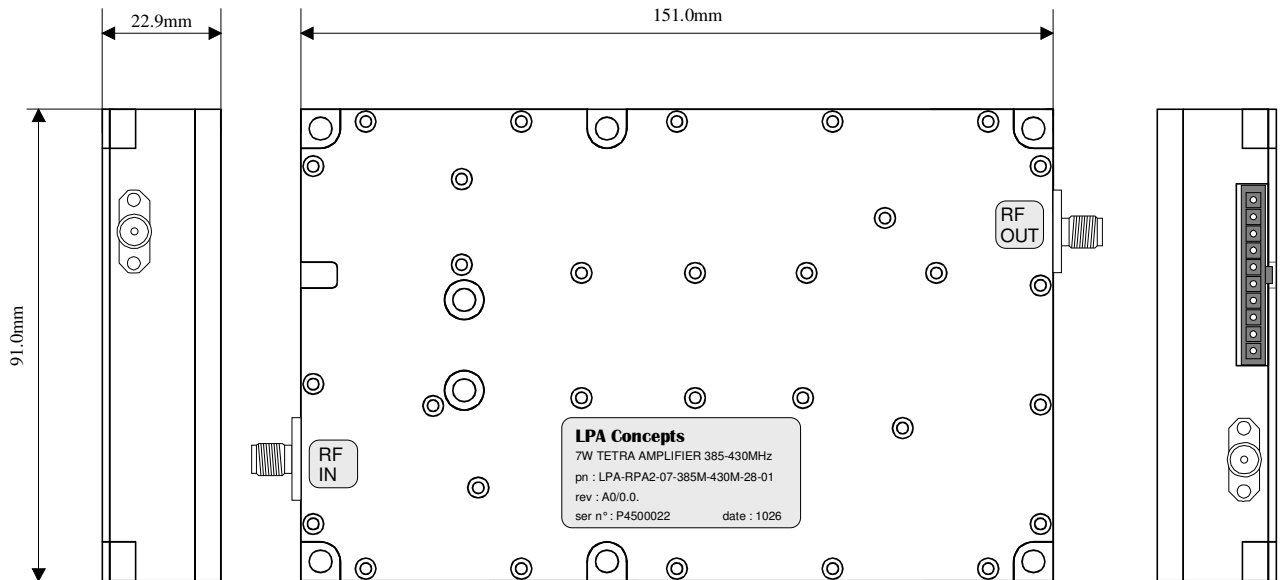
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Mechanical

Ref	characteristic	description	remarks
1	housing size	151mm x 91mm x 22.9mm	
2	housing finish	electroless nickel	
3	mounting	8 M4 screws	
4	RF connectors	SMA	

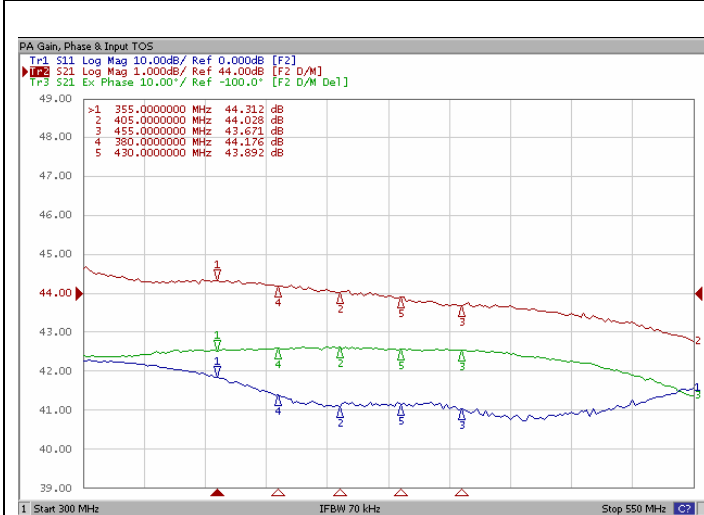
RPA2 package outline :



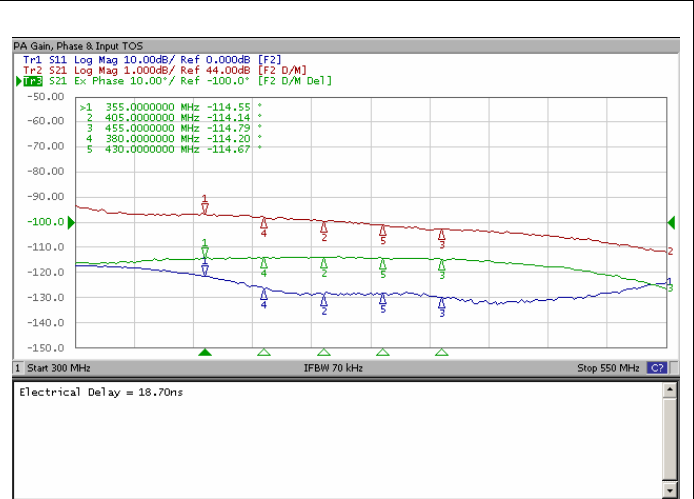
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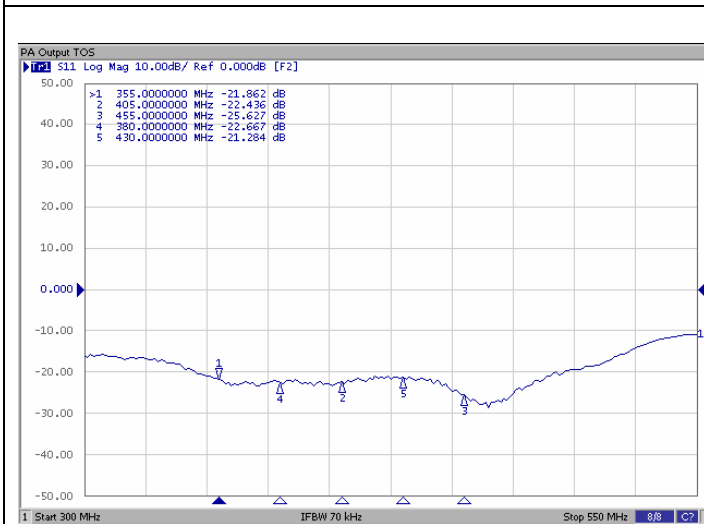
TYPICAL PERFORMANCE



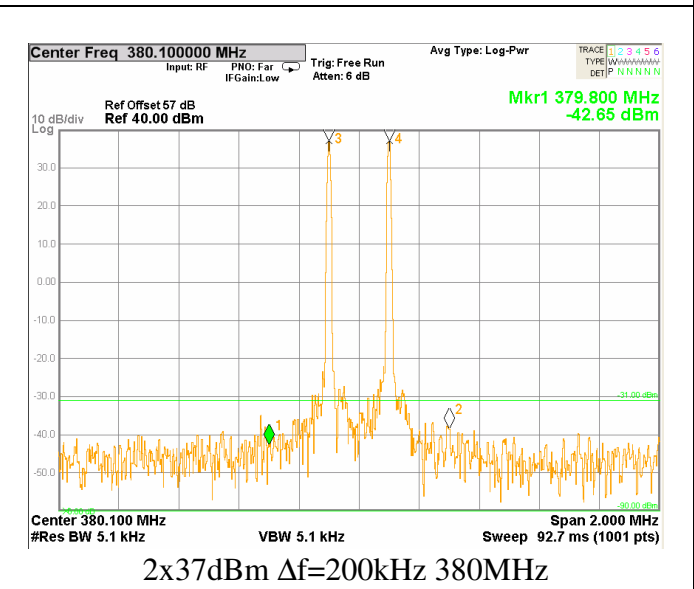
Gain vs frequency 300-550MHz



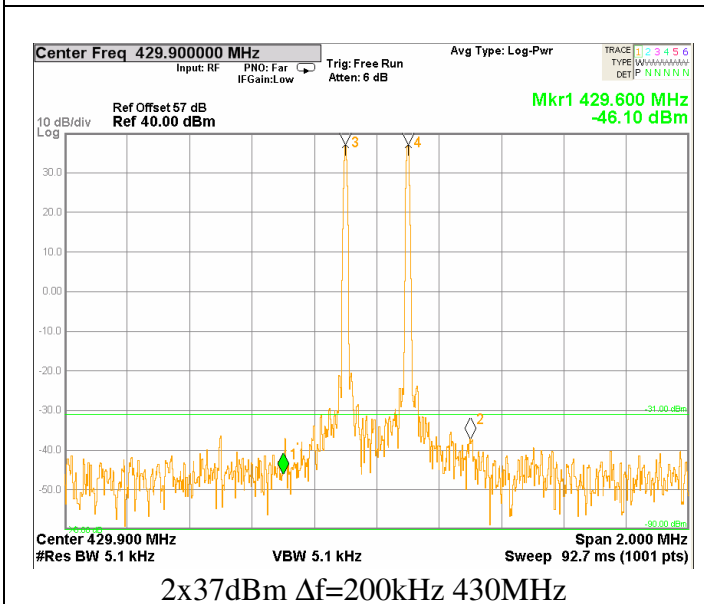
Phase vs frequency 300-550MHz (delay = 18.7ns)



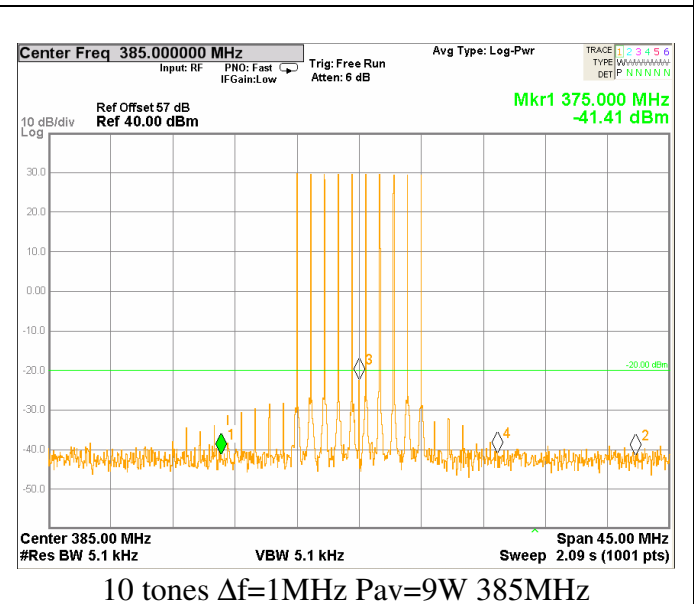
Output return loss 300-550MHz



2x37dBm Δf=200kHz 380MHz



2x37dBm Δf=200kHz 430MHz



10 tones Δf=1MHz Pav=9W 385MHz

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